



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/722,635	11/26/2003	Ching Man Stanley Tsui	P/4076-62	7319
2352	7590	08/12/2004	EXAMINER	
OSTROLENK FABER GERB & SOFFEN 1180 AVENUE OF THE AMERICAS NEW YORK, NY 100368403			HOLLINGTON, JERMELE M	
			ART UNIT	PAPER NUMBER
			2829	

DATE MAILED: 08/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/722,635	Applicant(s) STANLEY TSUI ET AL.	
	Examiner Jermele M. Hollington	Art Unit 2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 10-19 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 November 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper."

Therefore, unless the examiner on form PTO-892 has cited the references, they have not been considered [see page 2, line 28].

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: item no. 32 in Figs 2-3.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "guide blocks" and "manual test jig" have both been used to designate item no. 36.

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, a distal end [claims 1 and 13] must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure

Art Unit: 2829

number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency.

Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under

Art Unit: 2829

37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-8 and 10-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Langgard (5175493) in view of Staab (5570033).

Regarding claim 1, Langgard discloses [see Figs. 5-7] a unitary spring contact probe (spring probe 4) comprising a resilient spring section (spring 43), a plunger section (plunger 35) extending from a distal end (head portion 39) of the resilient spring section (43) for contacting a semiconductor device under test (DUT 75 see Fig. 7) and a stopper (crimp 41) substantially transversely to an axial direction of the plunger section (35). However, he does not disclose the stopper projecting from the plunger as claimed. Staab discloses [see Fig. 2] a spring contact probe (spring probe 12), a plunger section (isolation rings 26) and a stopper (BGA device stop 22) [see col. 3, lines 8-10] projecting from the plunger section (26). Further, Staab teaches that the addition of stopper 22 is advantageous because it prevents over-insertion of a BGA device into a plate and limits the amount of compression of the spring probes, which extend the life of the probe and the plate. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Langgard by adding the stopper to project from the plunger section as taught by Staab in order to prevent over-insertion and limit the amount of compression of the spring probes so that the to life of the spring probe could be extend during testing.

Regarding claim 2, Langgard discloses the probe (4) is formed from a wire-like material [slender rod].

Regarding claim 3, Langgard discloses a second plunger section (plunger 35 bottom portion in Fig. 7 of probe 4) at another distal end (head portion 39 bottom portion in Fig. 7 of probe 4) of the resilient spring section (43) that is opposite the plunger section (35).

Regarding claim 4, Langgard discloses the second plunger section (plunger 35 bottom portion in Fig. 7 of probe 4) extends out of the spring section (43) in a substantially straight line in the same general axial direction as the spring section (43).

Regarding claim 5, Langgard discloses the second plunger section (plunger 35 bottom portion in Fig. 7 of probe 4) extends substantially parallel to the plunger section (35) when the spring section (43) is uncompressed.

Regarding claim 6, Langgard discloses the plunger section (35 top probe 4 in Fig. 7) and the second plunger section (35 bottom probe 4 in Fig. 7) lie on opposite sides of an axial plane passing perpendicularly through a center (connecting pins 68) of the spring section (44).

Regarding claim 7, Langgard discloses the plunger section (35 top probe 4 in Fig. 7) and the second plunger section (35 bottom probe 4 in Fig. 7) are inherently [see Note below claim] fashioned from a single strip of material [beryllium cooper see col. 4, lines 20-22].

[Note: Although the prior art does not specifically disclose the plunger section material, this feature is seen to be an inherent teaching of the plunger since the barrel 2, which is a part of the probe, disclose the material and it is known in the art that if one part of the spring probe material is disclose that the whole spring probe is made of the same material [see U.S. Patent 5,818,248 col. 4, lines 33-38 which states:

Art Unit: 2829

“...spring probes are made from a beryllium copper alloy and include an outer receptacle, a barrel in the outer receptacle, a plunger 17 projecting from the barrel, and a compression spring inside the barrel...”]]

Regarding claim 8, Langgard discloses a second stopper (crimp 41 located on the bottom probe 4 in Fig. 7) substantially transversely to an axial direction of the second plunger section (35). However, he does not disclose the stopper projecting from the plunger as claimed. Staab discloses [see Fig. 2] a spring contact probe (spring probe 12), a plunger section (isolation rings 26) and a stopper (BGA device stop 22) [see col. 3, lines 8-10] projecting from the plunger section (26). Further, Staab teaches that the addition of stopper 22 is advantageous because it prevents over-insertion of a BGA device into a plate and limits the amount of compression of the spring probes, which extend the life of the probe and the plate. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Langgard by adding the stopper to project from the plunger section as taught by Staab in order to prevent over-insertion and limit the amount of compression of the spring probes so that the to life of the spring probe could be extend during testing.

Regarding claims 10-11, Langgard inherently [see Note below claim] discloses the spring contact probe (4), the spring section (43), plunger section (35) and stopper (41) are fashioned from a single strip of material [beryllium copper see col. 4, lines 20-22].

[Note: Although the prior art does not specifically disclose the spring contact probe, the spring section, plunger section and stopper material, this feature is seen to be an inherent teaching of the plunger since the barrel 2, which is a part of the probe, disclose the material and it is known in the art that if one part of the spring probe material is disclose that the whole spring probe is made of the same material [see U.S. Patent 5,818,248 col. 4, lines 33-38 which states: “...spring probes are made from a beryllium copper

Art Unit: 2829

alloy and include an outer receptacle, a barrel in the outer receptacle, a plunger 17 projecting from the barrel, and a compression spring inside the barrel...”]]

Regarding claim 12, Langgard discloses the spring contact probe (4) is inherently [see Note below claim] plated with a material selected from the group consisting of nickel, palladium, hard gold and rhodium [see col. 4, lines 20-22].

[Note: Although the prior art does not specifically disclose the spring contact probe, the spring section, plunger section and stopper material, this feature is seen to be an inherent teaching of the plunger since the barrel 2, which is a part of the probe, disclose the material and it is known in the art that if one part of the spring probe material is disclose that the whole spring probe is made of the same material [see U.S. Patent 5,818,248 col. 4, lines 33-38 which states: “...spring probes are made from a beryllium copper alloy and include an outer receptacle, a barrel in the outer receptacle, a plunger 17 projecting from the barrel, and a compression spring inside the barrel...”]]

Regarding claim 13, Langgard discloses [see Figs. 5-7] an apparatus comprising a unitary spring contact probe (spring probe 4) comprising a resilient spring section (spring 43), a plunger section (plunger 35) extending from a distal end (head portion 39) of the resilient spring section (43) for contacting a semiconductor device under test (DUT 75 see Fig. 7) and a stopper (crimp 41) substantially transversely to an axial direction of the plunger section (35), one or more insulative guiding holders (shield 5) for mounting the spring contact probes (4), and a retainer mechanism (barrel 66) coupled to the stoppers (41) of the spring contact probes (4) for securing the spring contact probes (4) to the insulative guiding holders (5). However, he does not disclose the stopper projecting from the plunger as claimed. Staab discloses [see Fig. 2] a spring contact probe (spring probe 12), a plunger section (isolation rings 26) and a stopper (BGA device stop 22) [see col. 3, lines 8-10] projecting from the plunger section (26). Further, Staab teaches that the

Art Unit: 2829

addition of stopper 22 is advantageous because it prevents over-insertion of a BGA device into a plate and limits the amount of compression of the spring probes, which extend the life of the probe and the plate. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Langgard by adding the stopper to project from the plunger section as taught by Staab in order to prevent over-insertion and limit the amount of compression of the spring probes so that the to life of the spring probe could be extend during testing.

Regarding claim 14, Langgard discloses the retainer mechanism (barrel 66) comprises a retainer plate (barrel core 3) including holes [not number but see Fig. 4] that allow the plunger sections (35) of the spring contact probes (4) to protrude from a surface of the retainer plate (3) for contacting the semiconductor device (test site 73).

Regarding claim 15, Langgard discloses cavities [not number but shown in Fig. 7] in the insulative guiding holders (5) for introducing purging air onto the spring contact probes (4).

Regarding claim 16, Langgard discloses an electrical circuit (connector site 78) contacted by an end of the spring contact probe (4) that is opposite the plunger section (35), wherein the electrical circuit (78) is coupled to signal processing resources (board 77) of the apparatus.

Regarding claim 17, Langgard discloses a second plunger section (35) at said end of the resilient spring section (43) that is opposite the plunger section (35) for contacting the electrical circuit (78).

Regarding claim 18, Langgard discloses a second retaining mechanism (barrel 66) coupled to another stopper (41) of the spring contact probes (4) projecting from the

Art Unit: 2829

second plunger section (35) for securing the spring contact probes (4) to the insulative guiding holders (5).

Regarding claim 19, Langgard discloses the second retaining mechanism (66) comprises a retainer plate (barrel core 3) including holes [not number but shown in the figures] that allow the second plunger section (35) of the spring contact probe (4) to protrude from a surface of the second retainer plate (3) for contacting the electrical circuit (78).

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Petlock, Jr. (4307928), Katz (4438397), Kruger et al (4773877), Sabin (4783624), Nanzai (4801876), Golden et al (5196789), Richards (5225773), Staab (5585739), Johnston (5667410), St. Onge (5818248), Stowers et al (5936421), Caggiano et al (6401048) and Yeghiayan et al (6570399) disclose a method and apparatus for spring probe device.

10. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

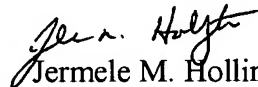
11. The following is a statement of reasons for the indication of allowable subject matter: regarding claim 9, in the examiner's opinion, it would not have been obvious to a person of ordinary skill in the art to have the stopper configured to act as a thermal device for facilitating the dissipation of heat from the spring contact probe with the prior art to get the results of the claimed invention.

Art Unit: 2829

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jermele M. Hollington whose telephone number is (571) 272-1960. The examiner can normally be reached on M-F (9:00-4:30 EST) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (517) 272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jermele M. Hollington
Examiner
Art Unit 2829

JMH
August 6, 2004